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A strategic approach to financing public transport through property values

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A strategic approach to financing public transport through property values

Marcus Enoch, Stephen Potter, and Stephen Ison

Traditional sources of finance are becoming inadequate to meet the needs of public transport. This has led to the emergence of a number of local earmarked tax and charging mechanisms, in particular road user charges and tolls. This article examines one group of such mechanisms: charges to property owners and developers, and draws on worldwide examples of the practical use of a number of such schemes. There are a number of practical difficulties with capturing value from property owners and developers, and these are detailed with a commentary on best practice.

In the UK, the funding of public transport infrastructure projects has been the subject of much debate over recent years. There is little doubt that further investment is needed to refurbish, upgrade and build new public transport systems, but the suggested sources of the finance, whether private or public, and the funding mechanisms vary widely. What is becoming clear is that public transport projects will increasingly involve raising capital that will be repaid via a future revenue stream. A key issue in the UK is that, while mechanisms are being put in place for local transport authorities and other public bodies to raise capital loans, there are few revenue streams available to help repay those loans.

For example, the UK Government's July 2004 Comprehensive Spending Review authorised the London Mayor to proceed with a £3bn programme of public transport development schemes funded through borrowing. This has forced the Mayor to raise public transport fares by 2-3% above inflation in order to service the interest on the debt. Raising fares by 2-3%, while the real cost of motoring is falling, suggests that such an approach could well be self-defeating in the long term and seems counter-productive to UK transport policy. Outside London the options are even more restricted, as public transport fares and investment decisions are in the hands of deregulated and privatised operators.

To address the growing funding problem, a number of countries have adopted 'earmarked' revenue streams to support public transport, although for many this has been undertaken in order to subsidise fare reductions rather than support capital investment. In France, for example, the *Versement Transport* (employer tax) was introduced in 1971 and played a major part in funding the upgrading and expansion of the Paris Metro. Rolled out nationwide, the tax has part-funded the new light rail and metro systems that now exist in every French city.

In the UK a far more recent initiative has been Central London's congestion charge, which has helped finance the upgrading of bus services to accommodate the rise in passengers associated with the 20% cut in road traffic achieved by the charge. In some places, hypothecated parking charges and fines aid the funding of public transport and, in the United States, local motor and consumption taxes are a common source of earmarked revenue, with taxes on goods as varied as cigarettes, beer, hotel bills, gambling, electricity, or a general sales tax, used to support or develop public transport systems.

Conflicting rationale

Local earmarked taxes and charges have emerged over a number of years and in different specific situations. In analysing these measures three main groupings have been identified which represent alternative principles of public finance (Ubbels *et al* 2004.). These are:

- Beneficiary Pays;
- Polluter Pays;
- Spreading the Burden.

Beneficiary pays (public good)

The oldest rationale for taxation is to fund public goods that cannot be provided on a market exchange basis. Defence, the police force, ambulance and fire services are obvious examples as are most roads and also certain aspects of public transport.

There thus exists an established public finance rationale to, for example, impose a local charge where public transport investment takes place or to employers located in that area. Apart from the example of the *Versement Transport* in France, there are also hypothecated taxes on property, land values and developers.

A further example is provided by a study commissioned by the Royal Institute of Chartered Surveyors which examined how planned improvements to London's transport infrastructure could be financed (Whelan, 2003). This particularly focused on property taxes, since the property value impact of public transport schemes can be significant. Measures considered included a business rate levy, tax incremental financing, Business Improvement Districts (BIDs), land value taxation and a green-field development tax. The potential yield of these was estimated at between £10M - £450M per annum.

Polluter pays (market failure)

The 'polluter pays principle' is a more recent, less well established, approach to both national and local taxation. This is theoretically rooted in Pigouvian taxation principles of marginal social cost pricing of transport externalities, although actual measure rarely reflect such rigor - hence our use of the less precise term 'polluter pays'.

In several countries, transport and environment ministries view 'polluter pays' taxes as a tool of transport demand management. As a result, a new group of measures has emerged, reflecting a different set of public finance principles centred on using the tax system to cut environmental externalities such as air pollution, climate change gas emissions and accidents, all of which result in the transport market operating in an economically inefficient manner. Pricing measures can internalise these external costs. This is the idea behind the European Commission's Green Paper on *Fair and Efficient Pricing for Transport* (CEC, 1995) and a variety of national measures used in the UK and elsewhere, including parking and congestion charges, road tolls and the Fuel Duty Escalator.

Spreading the Burden (equity and social inclusion)

The third group of fiscal measures is linked to the role that public transport plays in social inclusion. In consequence it might be expected that the sources of finance would be progressive in taxation terms. In reality however the issue of whether the taxes and charges to pay for public transport are themselves equitable does not seem to feature in any significant way. For example, the general sales tax, the most widely used earmarked charge in the US for funding public transport, is regressive. It falls disproportionately on the poorer members in society. Given the resistance of US citizens to paying taxes - especially as local referendums are often required to introduce them - such apparently contradictory pragmatism can perhaps be understood. The remainder of this article concentrates on one under-researched area, that of property owners and developer funding.

Property owners and developer funding

The private benefit of a public transport service or development can be substantial. A public transport development such as London's Jubilee Line, serving the Docklands, provides a large positive externality to property developers and businesses in the area. This notion of 'value capture' from beneficiaries of public transport investment is appearing on the policy agenda, reinforced by the shortfall of current funding sources and the transport policy problems associated with real fare increases.

Tsukada and Kuranami (1994) define value capture as a mechanism "by which the agency responsible for the development of the urban transport infrastructure captures part of the financial benefit gained by land developers or the community at large." This process of 'value capturing' or 'realising betterment', can involve property taxes and developer levies. In discussing these, we draw upon work conducted as part of a European Commission research project (Van den Branden *et al*, 2000) and reported subsequently in *Unfare Solutions* (Ubbels *et al*, 2004).

The range of property and developer measures can be grouped under three main headings, although there can be some overlap in practice between these (Figure 1):

- Compulsory capture of value enhancement through taxes and charges;
- Voluntary capture through a partnership agreement between developers or property owners and the state;
- An endowment of land received by the transport operator, in addition to that which is strictly needed for a transport project, in order to generate additional receipts.

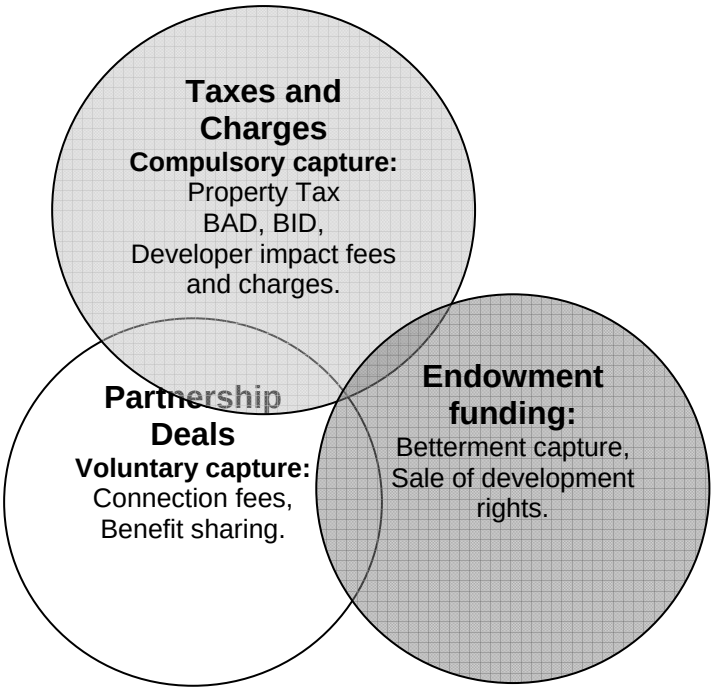


Figure 1: The three groups of property value capture mechanisms

Taxes and Charges (compulsory capture)

Paying for the provision of public services through *local property taxes*, is a fairly common method world-wide, used throughout Europe, Australasia and North America. In the USA, earmarking a proportion of a property tax for public transport became popular among local governments because it is based on immobile objects and so is difficult to evade. It is also easy to administer because it is simply a supplement to an existing tax and local authorities already administer land ownership records (Goldman, Corbett and Wachs, 2001).

Earmarked property taxes

In the USA, earmarked property taxes have been the most common method for supporting public transport systems. Cities levying such taxes include Anchorage, Minneapolis/St Paul, New York, Denver, Detroit, Milwaukee and Miami (Simpson, 1994). In addition a mortgage tax, effectively a form of property tax, is used to fund public transport in several parts of New York State, including Albany and Buffalo (Bushell, 1994). The most common form is a dedicated surcharge whether, temporary or permanent, undertaken for a specific purpose.

One typical example of the earmarked property tax is administered in Minneapolis, Minnesota (Gibbons, 2000; Metropolitan Council, 1999). In 1999, an earmarked property tax raised $US62.5M, covering just over 40% of Metro-Transit's $US156.2M operating budget. The local property tax was introduced in 1971, when the Metro Transit Commission was formed in order to operate public transport, and the tax currently applies to the 970,000 residential properties in the metropolitan council area. The tax is a flat rate in each county, but is 'feathered' so that residents of

the counties better served by transit services, most notably in the downtown areas pay more than suburban householders.

There are several problems with the Minneapolis property tax. First, it is capped so that revenue can grow only when property values rise. At times when property prices are flat, income raised has been static, even though the cost of providing transit services has risen. Second, property prices and thus the levels of service have risen in the 'cash rich' suburban counties, but not in the city area, where the need for transit is greatest. Primarily as a result of these factors, it looks like a dedicated local sales tax will replace the transit element of the property tax. As a major funding source, the way Minneapolis' property tax is designed tends to provide financial resources in the wrong place at the wrong time.

Benefit Assessment Districts

The Benefit Assessment District (BAD) approach seeks to overcome some of the problems associated with the general property tax. Benefit assessment is a fee on property used to fund part or all the capital investment that enhances the value of the property. Assessments must be proportional to any benefit to a property and a BAD cannot be established unless an engineering report identifies, and provides a method to calculate, the special benefits produced (Knox, 1996). In addition, property owners must be given notice and provided with a public hearing before an assessment district can be formed.

In theory, assessments should apportion project capital costs between benefiting property owners based on the value of the additional benefits each receives. In reality, it is difficult to isolate the impact of one capital expenditure from other influences on property values. An example of a BAD is in San Francisco where, from 1962 to 1999 it was used to raise funds for the Bay Area Rapid Transit (BART) system (Ubbels *et al*, 2004). A BAD was also used to part-finance the construction of the Los Angeles Red Line with two districts formed in 1985 (MTA for Los Angeles, 2002). Assessments received from these districts helped pay off bond funding for station construction on the first segment of the Metro Red Line. Assessment payments will terminate in 2008/09. Overall, 9% of the $US1.4bn cost of this part of the Metro Red Line was raised through BADs.

Business Improvement Districts (BIDs)

In the UK, a BID involves a supplement to the business rate in a specified district. This needs to be approved by a 50% vote by those paying business rates in the area. The vote is 50% by rateable value and so voting is weighted by the size of businesses according to how much they contribute to business rates. This is a recent mechanism, not confined to transport improvements but for any improvement within the specified district. The first vote for a BID took place in October 2004 in Kingston-upon-Thames for a 1% business rate supplement in order to raise £4M of additional funding for improvements to a shopping area (Cumberbatch, 2004). A BID is proposed to help fund London's Crossrail project. BIDs have also been used in the United States for a number of years.

Summary

A major advantage of earmarked property taxes is they are an 'add-on' to an existing tax, reducing administrative costs. They also provide a relatively large and stable revenue base. But property taxes can be unpopular and supplements raise the visibility of the tax, potentially increasing taxpayer resistance (Slack, 2001). A key disadvantage is that the base of the property tax may not increase as property valuations are only occasionally updated. To maintain revenues requires increasing the rate of the tax. There are also equity issues as poorer areas requiring public transport improvements yield less tax revenue than richer areas away from the public transport routes.

More fundamentally, financial institutions have come to view property development as too risky as security for infrastructure loans and Farrell (1999) notes that crises in the property market in the USA cut enthusiasm for this funding method. Property taxes may be limited to where 'safe' rises in land values occur, possibly where land is already in state ownership or has very low acquisition costs.

Impact fees

An example of how a UK local authority has sought to adapt developer charges (see below) is Cambridge City Council, which has developed a mechanism for charging developers according to the number of trips a site generates (Collins, 2002).

Two Area Transport Plans (ATPs) were adopted by the Supplementary Planning Guidance to the Cambridge Local Plan in 2000. These identify what new transport infrastructure and service provision is needed to facilitate large-scale development and then provides a robust means of calculating how individual development sites in the area should contribute towards the fulfilment of that transport infrastructure. Again this is not value capture, but an area-based assessment of the public cost imposed by the development. The ATPs do this by designing and costing the transport system necessary to support the planned development. A fee per trip per day is derived by dividing the cost of the transport upgrade by the number of generated trips in the ATP zone. Any development that generates more than 100 additional person trips (all modes) per day is liable for payments, which are proposed at £229 per additional generated trip. A recent review is proposing to lower the threshold to 50 person-trips per day. A similar impact fee mechanism – the Transport Impact Development Fund - is also in operation in San Francisco (TCRP, 1998).

Developer Charges

Developer charges and impact fees seek to compensate the community for the extra costs of public facilities arising from a private development. In the UK, USA (and many other countries) such charges are individually negotiated and often vary more by economic conditions affecting the development than the actual costs imposed upon the local community (USEPA, 1999). Bluntly, if a city is desperate for a development then no charge will be made, but if a developer is keen to locate in an area, the local authority will be in a strong position to exact a charge.

In the UK, developer charges often occur in the form of a ‘Section 106 agreement’, named after the section of the Town and Country Planning Act that provides powers for councils to set a payment as a condition of planning consent. In Scotland this is called a ‘Section 54 agreement’, after the parallel section in Scotland’s own Act.

Moore (2001) provides an example of a Section 106 Agreement that funded public transport. This was between Bracknell Forest Council and developer Helical Bar Developments (South East). A contribution of £50,000 indexed from agreement to the date of payment was to be paid on occupation of the site by the developer. The payment was to cover the costs of providing public transport services the routes of which include a link between the Western Industrial Area of Bracknell and the railway and bus stations in Bracknell town centre.

Such developer charges are made when granting planning permission and, by their nature, are concentrated in growth areas. This makes it difficult to use developer charges to support general public transport investment in a town or city as a whole, although this has been attempted at some locations. The income source is also irregular.

Summary

Charges by local authorities as part of granting developers planning permission are commonplace. Increasingly these are used to provide infrastructure support for public transport and, although difficult, sometimes also revenue subsidies as well. But developer levies have a number of practical limitations. The greatest need for public transport investment is often in places where only limited development is taking place, or in areas in need of regeneration. However developer levies are sporadic in time and space - in general being available in growth areas and at times of economic boom. Crucially, they are one-off fees, and the cost of public transport investment can change. For example, the £400M contribution to the cost of building the Jubilee Line by the developers of Canary Wharf in London seemed appropriate at the time, but the costs rose and the need for more public transport investment was greater than originally anticipated. The fee however had been paid and no further retrospective payment could be asked for.

Developer levies are also criticised for deterring development and increasing new housing costs, plus resulting in competition between local authorities. In sum, developer levies have selected uses but have severe limitations as a major general source of public transport finance.

Partnerships Deals (voluntary capture)

The second major group of financing measures involves the voluntary capture of some part of the rise in land and property values associated with public transport development. This covers a variety of deals and partnerships between land owners, property developers and the city authority or public transport operators. If a property developer calculates that a better public transport service will enhance the value of a development or the rents that can be charged, it makes business sense to enter into a voluntary agreement to pay part, or all of the costs involved. This is a simple

commercial arrangement with a return on investment to the property developer or owner.

Connection fees

The most basic level involves connection fees. These are simply a charge to property owners for a good physical connection to an existing municipal utility, for example, a charge to the owners/developers of both existing and new buildings for a direct connection to a station (McDaniel and White, 1999). They may be a one-off charge or an annual connection charge.

One example of a connection fee occurred in Toronto, Canada. The developer O&Y Properties Inc. wished to directly link a proposed 20-storey office complex to an adjacent metro station (TTC, 2001). O&Y Properties Inc. agreed to pay to the Toronto Transit Commission an entrance connection fee in annual instalments of $C28,292. Such connection fees generate a relatively small income flow, but often such connections are provided free to the user.

Benefit sharing

For a large property development, a more substantial investment could be commercially viable. In the USA, these are called 'benefit sharing' or 'joint development schemes'. A benefit sharing agreement usually contains legally binding language between the parties. Sometimes, projects may be initiated through a co-development; i.e. an informal working arrangement in which the public agency and the private developer work together to complete their individual projects in a mutually beneficial way. In this case, the co-developers attempt to site and co-ordinate their projects based on a non-binding legal agreement. Examples of benefit sharing, or joint development schemes, are widespread. The US Washington Metropolitan Area Transit Authority (WMATA) is well known for benefit sharing agreements. Its joint development-land use department has a mission that includes station area development and land use planning.

If a public transport development enhances land values and rents, then such deals should be in the commercial interests of property developers. However, in practice entirely voluntary commercial deals are rare. The private sector expects public authorities to provide services in return for paying normal business taxes. A second factor is that the benefits are usually spread over a wide number of users making individual deals nebulous and difficult to negotiate. However, there are some circumstances where a public transport authority can enter into deals and partnerships. The main factor is whether they have the expertise to do so.

Endowment funding

Endowment funding mechanisms involve a form of betterment capture where the state or public transport operator owns property and land *in addition* to that needed to run transport services. They sell the land when its value rises or enter into development deals to secure an income from the property itself. Endowment income can arise for purely historical and coincidental reasons, but in some cases it is a planned funding strategy.

Betterment capture

An attempted endowment funding was the Beckton extension of the Docklands Light Railway (DLR) in East London. This was to have been funded by selling newly serviced development land to recoup the initial investment in the light rail system (Keep, 2002). This was possible because from 1992 to 1998 the land along the route was owned by the London Docklands Development Corporation (LDDC), which was also developing the new DLR branch. In the event, a downturn in the property market meant that virtually no development occurred until 6-7 years after the line opened. By then the LDDC had been wound up, with the land disposed to other bodies, so the link to fund the DLR was broken.

Another endowment funding attempt was the Ørestadsbanen Metro Line in south Copenhagen, where a combination of land sales and a land value tax were intended to capture benefits from a new light rail system (Copenhagen Transport *et al* 1995; Ahm, 1999 and Jensen, 2002). The City of Copenhagen had requested money from the national government, which instead handed over its share of a 310-hectare site in the Ørestad area. The intention was that the new line would open up this site for development, regenerating part of the city and recapturing the development and construction costs. In practice the metro opened three years late and costs nearly doubled from the original estimate of €800M.

Sale of development rights

The most comprehensive and strategic example of endowment funding is provided by the Hong Kong Mass Transit Railway (MTR). The MTR receives no subsidy, but has endowed land adjacent to stations and depots. These are developed in partnership with property companies and the subsequent revenue from their property portfolio covers 20% of MTR operating costs and, in some cases, a substantial proportion of the capital cost for new metro lines (Gaffney, 1999). This mechanism works well in Hong Kong because of the nature of land ownership in the territory. The Hong Kong Government owns the freehold of all Hong Kong land and leases it for 50 or sometimes 70 years.

The MTR seeks developer partners who pay the entire land premium and construction costs. In return, MTR contributes the property development rights that are obtained as part of the agreement to build the railway. Thus there is very little cash outlay required from the MTR and profits are earned by sharing the development income, or through receiving part of the assets in kind (for example a shopping centre). This generated income, and revenue from leasing and managing the resultant property portfolio, offsets the construction costs for new MTR extensions.

The MTR takes the lead in implementing the strategy, which commences at the feasibility stage of the planning of any new line. Along three new urban lines, 18 property sites were developed, consisting of 28,000 apartments in ten estates, 150,500 m^2 of retail in three shopping centres (each located above a train depot), and 128,500m^2 of office space. MTR retains the management of all of this development.

On the new Hong Kong Airport Railway, the scope for development was substantial and is predicted to yield between $HK15bn and $HK20bn (£1-1.5bn) from developers, contributing over half of the construction cost.

Summary

Endowment can be a useful funding mechanism but it needs to be undertaken strategically. It is important to note that the endowment mechanism requires the vesting of *additional* land and property to the operator specifically to yield an income, or the legal right to acquire land at existing use value. It works best where there is integration between land ownership and public transport infrastructure developer, and where the latter has built up a capability in property development. Clearly endowment funding is vulnerable to delay and the vagaries of the property market.

Conclusion: Taxes, Deals or Endowment?

A number of issues have emerged from this review of funding sources from property owners and developers. First, there are strengths, problems and risks associated with all three types of measure. Taxes and charges are the most reliable continuous source while partnership deals tend to be one-off payments and endowment schemes need careful design and tailoring to funding needs (e.g. if a revenue stream is needed, a one-off partnership payment will be of little use). Figure 2 provides an analysis of the basic nature of the different types of funding mechanisms.

	One-Off	Irregular	Continuous
Taxes and charges	Developer Charges and Impact Fees		Earmarked Property and land value taxes BADS, BIDS
Partnership Deals	Connection fees Benefit sharing	Land endowment	
Endowment	Land sale	Betterment capture	

Figure 2: Typology of One-off, Irregular and Continuous funding mechanisms.

In general, taxes and charges produce a more continuous income, whereas partnerships and endowments are largely one-off or irregular income sources. As noted at the outset, there is an increased need for a revenue stream to service capital payments. This has led to attempts to adapt inherently 'one-off' mechanisms to produce a more continuous revenue stream.

Such attempts have had mixed results. Developer charges are irregular, but in some places are being reformed to produce a more continuous revenue source. Land endowment is also an irregular (and often unpredictable) income source, but its advanced use in places like Hong Kong show it can be strategically developed into a continuous income source once a property portfolio is developed. Commercial partnerships and deals, although politically attractive, seem to be most firmly in the irregular and 'one-off' categories. The challenge is therefore whether these can be realistically developed into a useful baseline revenue stream.

As well as a problem of timing is one of space. The areas where a property funding mechanism is most viable may not be where the public transport investment is most needed. A city-wide or regional approach may overcome this problem, but politically it may be difficult to extract income from lucrative property sites that receive no benefit at all from the subsequent public transport development.

A further issue concerns the core rationale of these various mechanisms. Are they 'value capture' or 'cost capture'? There is some blurring between these two concepts, but basically:

- *Cost Capture* is where the cost of a development is estimated and is then allocated proportionately to the benefiting land owners/developers.

- *Value Capture* is where the financial benefit to land owners/developers is estimated and part of this is captured.

The two concepts are related. Clearly cost capture is involved following an estimate of value capture, but the latter inherently reflects an ability to pay, whereas cost capture is not. This links into the geographical problem. For example costs of an inner city metro line may be allocated to property owners along its route, but this may be unrelated to their ability to pay or the rise in property values associated with the new metro line.

What seems to have happened is that a number of property funding mechanisms have evolved, or been adapted from simply what is available, without clearly thinking through such first principles. This is possibly the root of several of the problems with property funding measures, although more pragmatic issues (like over-dependence on the short-term vagaries of the property market) have tended to mask this strategic design issue.

There is one final and important conclusion. All of the mechanisms reviewed here are rooted in the 'beneficiary pays' principle of public finance. Modern earmarked funding measures that integrate with transport and environmental policy are not of this nature. They stem from the alternative principle that the 'polluter pays'. The property owner and developer measures charge those who are 'good' - i.e. are responsible in their environmental and transport behaviour and not those who are 'bad' in their environmental and transport behaviour.

Here is a strategic dilemma. As noted previously, there is a danger that the substantial use of 'beneficiary pays' mechanisms might encourage property developers to relocate away from areas well served by public transport, so generating a structural shift to an even more car-intensive system! Theoretically this should not be so, so long as the tax is no greater than the benefit achieved from the investment that it funds. However in practice perceptions and decision making may be different and the distribution of the benefits of the public transport benefit may be uneven.

This means that there needs to be great care in developing the beneficiary pays rationale beyond that of a minor revenue source. A mix of beneficiary and polluter pays mechanisms could produce contradictory signals, cancelling out the effects of each other. If a government were to adopt an overall 'polluter pays' taxation regime for property owners and developers, then it would matter little some 'beneficiary

pays' mechanisms were used within this context. For example, all property and developer taxation could be weighted according to a measure of environmental impact, including the public transport accessibility of a site (overall carbon emissions by a site's employees and visitors might be used). There could be additional tax breaks for capital and revenue spent on 'greening' employee and customer travel (e.g. through site Travel Plans) and the like.

Such a coherent 'polluter pays' taxation regime does not so far exist. It is arguably fair that beneficiaries should pay a proportion of what they gain from public transport improvements, as well as polluters paying their external costs. The two are not mutually exclusive, but are two sets of benefits. Overall, a package of measures could in principle be developed that both recaptures a proportion of the benefit from property owners and developers, and is counterbalanced by 'polluter pays' mechanisms. These would ensure that it makes business sense to locate in accessible areas well served by public transport.

References

Ahm, K. (1999) Personal communication, Head of finance, Ørestadsselskabet, Copenhagen.

Bushell, C. (1994) Jane's urban transport systems 1993/94. Jane's Information Group, Coulsdon, Surrey.

Collins S. (2002) Personal communication, Cambridgeshire County Council, Cambridge, July.

Commission of the European Communities (1995) Towards Fair and Efficient Pricing in Transport. Policy options for internalising the external costs of transport in the European Union. Green Paper. CEC, COM (95) 691, Brussels.

Copenhagen Transport, Danish Ministry of Transport, Arhus sporveje. (1995) The financing of urban public transportation systems, Draft Report, Copenhagen, May.

Cumberbatch, S. (2004) Service boost with BID levy, *Surveyor*, 21 October, 10.

Farrell, S. (1999) Personal communication, Imperial College, University of London, 27 July.

Gaffney, P. (1999) Financing Transit in Hong Kong, Urban Public Transport Funding, UITP Seminar, Paris, 13-14 October.

Gibbons. (2000) Personal communication. Metro Council, Minneapolis/St Paul, Minnesota, January.

Goldman, T., Corbett, S., and Wachs, M. (2001) Local Option Transportation Taxes in the United States, Institute of Transportation Studies, University of California at Berkeley, Research Report UCB-ITS-RR-2001-3, March.

Jensen, J. (2002) Personal interview, Land Valuation Assessment Officer, City of Copenhagen, June.

Keep, D. (2002) Personal interview, Company Secretary, Docklands Light Railway, London, May.

Knox, J. K. (1996) Benefit Assessment Districts. Enhancing the Quality of Life in California, Planning & Conservation League and PCL Foundation, Sacramento, California. Visit http://www.pcl.org/Store/benereport.html.

McDaniel, J. B., and White, S. M. (1999) The Zoning and Real Estate Implications of Transit-Oriented Development, TCRP Project J-5, Legal Aspects of Transit and Intermodal Transportation Programs, Transit Cooperative Research Program, Federal Transit Administration, Legal Research Digest, January, Number 12.

Metropolitan Council (1999) Public transit – Metro Transit, http://www.metrocouncil.org/transit/metrotra.htm, Minneapolis/St Paul, Minnesota.

Metropolitan Transportation Authority of Los Angeles (2002) Benefit Assessment Districts Program, Benefit Assessment Districts Program Office, MTA Los Angeles. Visit http://www.mta.net/trans_planning/CPD/BAD/default.htm.

Moore N (2001) Personal communication, Team leader implementation, Planning Division of Bracknell Forest Council, Berkshire.

Simpson, B.J. (1994) Urban public transport today. E&FN Spon, London.

Slack, E. (2001) Alternative approaches to taxing land and real property, Research Paper, Enid Slack Consulting Inc., October. Visit http://www.worldbank.org. Last accessed 31 May 2002.

Toronto Transit Commission (2001) Queen Street East Development – Entrance Connection (Maritime Tower), TTC Meeting Report 18 July, Toronto. Visit http://www.ttc.ca/postings/gso-comrpt/documents/report/f1264/_conv.htm.

Transit Cooperative Research Program (1998) *Funding strategies for public transportation*, TRCP Report 31, v1/2, Project H-7 FY 95, Transportation Research Board, National Research Council, Federal Transit Administration, National Academy Press, Washington DC.

Tsukada, S. and Kuranami, C. (1994) Value Capture: the Japanese Experience, in Farrell S (ed), Financing Transport Infrastructure, PTRC, London, January.

Ubbels B, Enoch M P, Potter S and Nijkamp P (2004) Unfare Solutions: local earmarked charges to fund public transport. London, Spon Press.

US Environmental Protection Agency (1999) A Guidebook of Financial Tools - Paying for sustainable environmental systems. Office of the chief financial

officer, US Environmental Protection Agency, Washington DC, April. Visit http://www.epa.gov/efinpage/guidebook/guidebooktp.htm.

Van den Branden, T., Knight, P., Potter, S., Enoch, M. P., Ubbels, B., and Nijkamp, P. (2000) Fair and efficient pricing in transport - the role of charges and taxes, Research Project for DG TREN, European Commission, Oscar Faber, Birmingham.

Whelan, J. (2003) Funding London's Transport Needs. London, Royal Institution of Chartered Surveyors.

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